
Bolens[®]

Tractor

Models 1463 (1400)

1467 (1402)

1468 (1468)

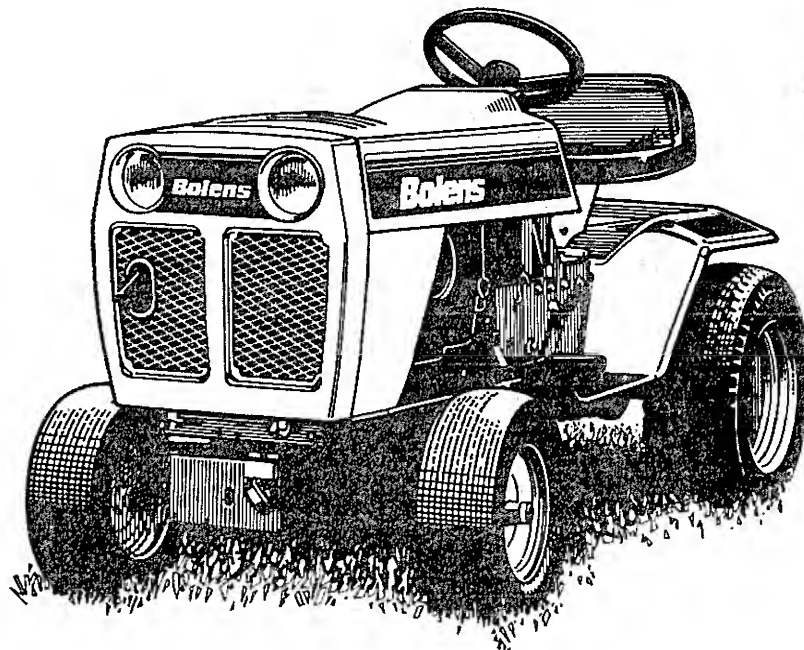
1667 (1600)

1668 (1600)

1668L (1600)

1669 (1669)

1669L (1669)



Safety and Operation Instructions

1760136
FORM 3884-8 (11/89)
SUPERSEDES 3834-7

INTRODUCTION

Thank you for purchasing this piece of Bolens equipment. We feel you now own one of the finest pieces of equipment available.

This is a safety, operation and general maintenance manual which does not attempt to cover major repairs. Bolens equipment is carefully designed, engineered, and manufactured to give good performance if properly operated and maintained. Review this manual to familiarize yourself with the unit, its features and its operation.

Your Warranty Statement is included separately with this manual. Please read it carefully. Also, please return the completed postpaid owner registration card which is included with this manual. The purpose of this card is to register each unit and owner at the factory for safety purposes.

CONTACT YOUR NEAREST BOLENS DEALER FOR ANY REPLACEMENT PARTS OR SERVICE NEEDED. DO NOT RETURN PARTS DIRECTLY TO THE FACTORY. THE FACTORY REQUIRES PRIOR APPROVAL ON RETURNS, AND APPROVALS ARE ISSUED ONLY TO BOLENS DEALERS OR DISTRIBUTORS.

WARNING TO OWNERS/OPERATORS

On Federal land, and in some states, it is unlawful to operate an internal combustion engine using hydrocarbon fuels on any forest covered, brush covered or grass covered land; or on land covered with grain, hay or other flammable agricultural crop without an engine spark arrestor muffler in continuous effective working order. The engine on your unit, like most garden equipment is an internal combustion engine that burns gasoline (a hydrocarbon fuel); therefore, it must be equipped with a spark arrestor muffler in proper working order. The spark arrestor must be attached to the engine

exhaust system in such a manner that flames or heat from the system will not ignite flammable material.

Contact your state forester or state fire marshal for specific regulations in your area. Compliance with these regulations is the sole responsibility of the owner/operator, and not of Bolens Corporation. Owner/operator is responsible for any legal action taken as a result of non-compliance with these regulations, as well as any damages/fire suppression costs incurred resulting from a fire caused through non-compliance with these regulations.

For Engine Service & Repairs:

Please contact your nearest authorized Tecumseh or Briggs & Stratton Service Center if engine service or repair is needed. This listing is in the phone book "Yellow Pages" under "Engines, Gasoline" or "Gasoline Engines." The Service Center will need to know the model, Type and Code number of your engine. Your local Tecumseh or Briggs & Stratton Dealer can handle repairs, parts orders and warranty

service concerning the engine alone. If you wish to contact us before seeing the Engine Dealer, or if you have difficulty getting engine service or parts locally, be sure to let us know. See the enclosed Engine Manufacturer's literature for full terms of the Limited Warranty on the engine and other details about the engine.

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IDENTIFICATION NUMBERS



To ensure prompt service when repairs or adjustments are required, your Bolens Dealer must have the following information. For your own personal reference, fill in the serial number spaces provided below.

Model/Serial number of tractor (Located on fender under seat)

Engine Model/Serial/Spec Numbers (A)

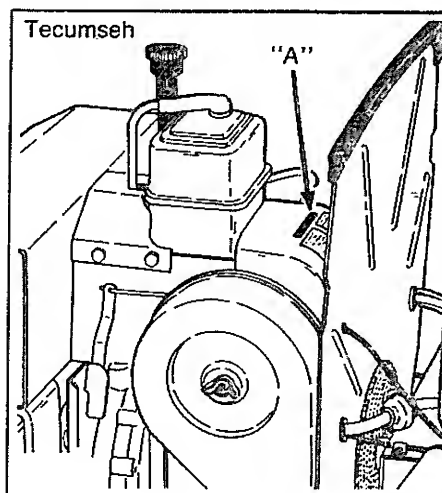
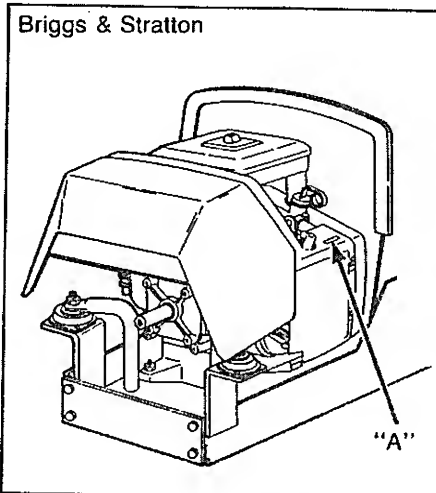
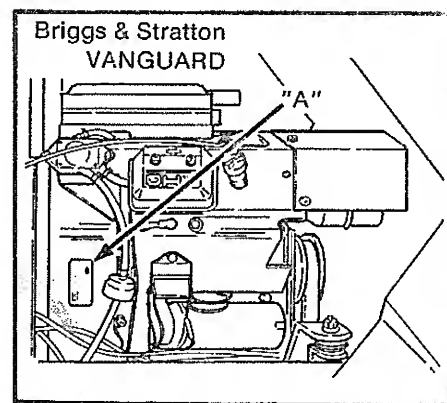
ENGINE PARTS

When ordering engine component parts, contact the engine manufacturer or dealer in your area.

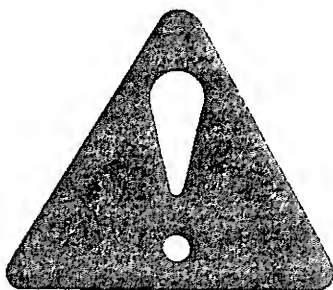


CAUTION

WE URGE USING ONLY GENUINE BOLENS REPLACEMENT PARTS, WHICH MEET ALL OF THE LATEST REQUIREMENTS. REPLACEMENT PARTS MANUFACTURED BY OTHERS COULD PRESENT SAFETY HAZARDS EVEN THOUGH THEY MAY FIT ON BOLENS PRODUCTS.



GENERAL SAFETY PRECAUTIONS



This is a safety alert symbol. Whenever you see this symbol, read and obey the safety message that follows it.

Failure to obey the safety message could result in personal injury or property damage.



CAUTION

Indicates a situation that could cause property damage.



WARNING

Indicates a situation that could cause personal injury.



DANGER

Indicates a situation that could result in severe injury or death.

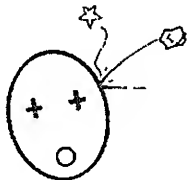
Preventing accidents is the responsibility of every equipment operator. The following general safety precautions must be fully understood and followed by every operator of this equipment. Review them frequently and NEVER TAKE CHANCES. BE CAREFUL BEFORE, DURING AND RIGHT AFTER USE OF ANY POWER EQUIPMENT. ACCIDENTS CAN BE PREVENTED.

1. Know the controls of the machine and how to stop quickly. READ THIS OPERATOR'S MANUAL and the instructions furnished with attachments.

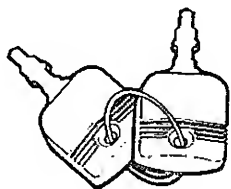
2. Do not allow children to operate the machine. Do not allow adults to operate it without proper instruction.

GENERAL SAFETY PRECAUTIONS (Continued)

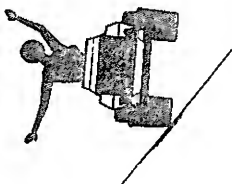
3. Do not carry passengers. Do not mow when children and others are around.
4. Clear the work area of objects (wire, rocks, etc.) which might be picked up and thrown. Discharge materials can exceed 200 mph.



5. Disengage all attachment clutches and shift into neutral before attempting to start the engine (motor).
6. Disengage power to attachment(s) and stop the engine (motor) before leaving the operator's position.
7. Disengage power to attachment(s) and stop the engine (motor) before making any repairs or adjustments.



8. Unless otherwise specified, before performing any maintenance or adjustments:
 - a. Stop engine.
 - b. Remove key from ignition.
 - c. Disconnect spark plug wire and keep it from touching spark plug.
9. Disengage power to attachment(s) when transporting or not in use.
10. Take all possible precautions when leaving the vehicle unattended, such as disengaging the attachment drive, lowering the attachment(s), setting the parking brake, stopping the engine, and removing the key.
11. Do not stop or start suddenly when going uphill or downhill. Mow up and down the face of steep slopes; never across the face.



12. Reduce speed and exercise extreme caution on slopes and in sharp turns to prevent tipping or loss of control. Be especially cautious when changing direction on slopes.
13. Stay alert for holes, rocks, and roots in the terrain and other hidden hazards. Keep away from drop-offs.
14. Use care when pulling loads or using heavy equipment.
 - a. Use only approved drawbar hitch points.
 - b. Limit loads to those you can safely control.
 - c. Do not turn sharply. Use care when backing.
 - d. Use counterweight(s) or wheel weights.



15. Watch out for traffic when crossing or near roadways.
16. When using any attachments, never direct discharge of material toward bystanders nor allow anyone near the vehicle while in operation.

Open doors if the engine is running in the garage-exhaust fumes are dangerous. Do not run the engine indoors.

17. Handle gasoline with care-it is highly flammable.
 - a. Use approved gasoline container.
 - b. Never remove the fuel cap of, or add gasoline to, a running or hot engine, or an engine that has not been allowed to cool for several minutes after running. Never fill the tank indoors and always clean up spilled gasoline.

18. Never store the equipment with gasoline in the tank inside a building where fumes may reach an open flame or spark. Allow the engine to cool before storing in any enclosure.

19. To reduce fire hazard, keep the engine free of grass, leaves, or excessive grease.

20. Keep the vehicle and attachments in good operating condition, and keep safety devices in place and working.

21. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.

22. The vehicle and attachments should be stopped and inspected for damage after striking a foreign object, and the damage should be repaired before restarting and operating the equipment.

23. Do not change the engine governor settings or overspeed the engine.

24. When using the vehicle with mower, proceed as follows:

- a. Mow only in daylight or in good artificial light.
- b. Never make a cutting height adjustment while the engine is running.
- c. Shut the engine off and disengage attachments when removing the grass catcher or unclogging chute.
- d. Check the blade mounting bolts for proper tightness at frequent intervals.

25. Under normal use the grass catcher bag material is subject to deterioration and wear. It should be checked frequently for bag replacement. Replacement bags should be checked to ensure compliance with the original manufacturers recommendations or specifications.

26. Disengage power to mower before backing up. **Do not mow in reverse unless absolutely necessary** and then only after careful observation of the entire area behind the mower. A large percentage of accidents involving children occur while backing up.

ATTACHMENTS AND KITS

Below is a list of attachments and kits that are available for your unit. The information listed is the most current at the time this manual was printed. Check with your nearest Bolens dealer for up-to-date information.

<u>Model</u>	<u>Description</u>	<u>Model</u>	<u>Description</u>
16465	Dump Cart (10.0 Cu. Ft.)	18335	42" Rear Discharge Rotary Mower
18300	42" Side Discharge Rotary Mower	18346	Snowthrower Installation Kit (for 50146)
18301	48" Side Discharge Rotary Mower	19222	Mech. Blade Angling Kit for (18305)
18305	42" Blade	21741	Front Wheel Weights
18311	38" Snowthrower (requires 30902 & 18318)	30902	Rear Wheel Weights (pair)
18318	Front PTO Kit (use with 18311 or 18322)	30917	Power Packer Plus (requires 30921 or 50922)
18320	8" Tine and Hood Extension for 18322	30921	Cart Grass Collector (requires 30917)
18322	33" Rotary Tiller (requires 30902 & 18318)	50146	46" Two Stage Snowthrower (requires 18346 & 18318) (recommend 30902)
18325	Electric Lift Kit (Gear Tractors)	50194	Storage Cover
18327	Hydraulic Lift Kit (Hydro Tractors, Standard equipment on 1668L, 1669L)	50922	Two-Bag Grass Collector (requires 30917)
18330	Sleeve Hitch	50930	Cab (hard top w/vinyl sides)
		1716190	Chains, 23 x 8.50-12

SPECIFICATIONS

Bolens reserves the right to make changes in specifications shown herein, add improvements or discontinue the manufactured product at any time without notice or obligation.

ENGINE -

(1463) Tecumseh - 14 HP (10.4 kW)
at 3600 RPM
Single Cylinder, Air Cooled
(1467) Briggs & Stratton 14 H.P.
(10.4 kW) at 3600 RPM
Twin Cylinder, Air Cooled
(1468) Briggs & Stratton Vanguard
14 H.P. (10.4 kW) at 3600 RPM
Twin Cylinder, Air Cooled
(1667 & 1668) Briggs & Stratton
16 H.P. (11.9 kW) at 3600 RPM
Twin Cylinder, Air Cooled
(1669 & 1669L) Briggs & Stratton
Vanguard 16 H.P. (11.9 kW) at
3600 RPM Twin Cylinder, Air cooled
Oil Capacity:
1463 3-1/4 pts. (1.5 liter)
1467, 1667 & 1668 3 pts. (1.4 liter)
1468, 1669 & 1669L 3.5 pts. (1.6 liter)
Oil Filter:
(1468, 1669 & 1669L) Contact your
nearest Briggs & Stratton dealer for oil
filter specifications.
Air Cleaner Dry Type
Battery 280 cca

Tires Front: 16 x 6.50-8
Rear: 23 x 8.5-12
Fuel Capacity..... 3.5 gal. (13.2 liters)
Power Attachments: Electric Clutch
Brake-with belts and universal joints
Wheelbase 49 in. (123 cm.)
Turning Radius 77 in. (192 cm)
Ground Clearance 7 in. (17 cm)
Height 44 in. (111.8 cm)
Width 38 in. (96.5 cm)
Length 69 in. (175 cm)
Shipping Weight:
1463, 1467, 1468, 1667, 1668 & 1669
..... 703 lbs. (319 kgs.)
1668L & 1669L 781 lbs. (355 kgs.)
Standard Equipment Solid State
ignition; headlights; electric clutch/
brake to drive front, center or rear
attachments; electric starting;
interlock switches to prevent tractor
from being started with attachment
switch in ON position, and brake
disengaged; ammeter; cruise control
on 1668 S/N 0400101 and later and
1669; hydraulic lift 1668L and 1669L.

MODEL 1668, 1668L, 1669 & 1669L

Drive Hydrostatic Transmission
Speed Infinitely variable
Forward: 0-6.8 mph
(0-10.0 km/hr)
Reverse: 0-3.4 mph
(0-5.5 km/hr)

MODELS 1463, 1467, 1468 & 1667

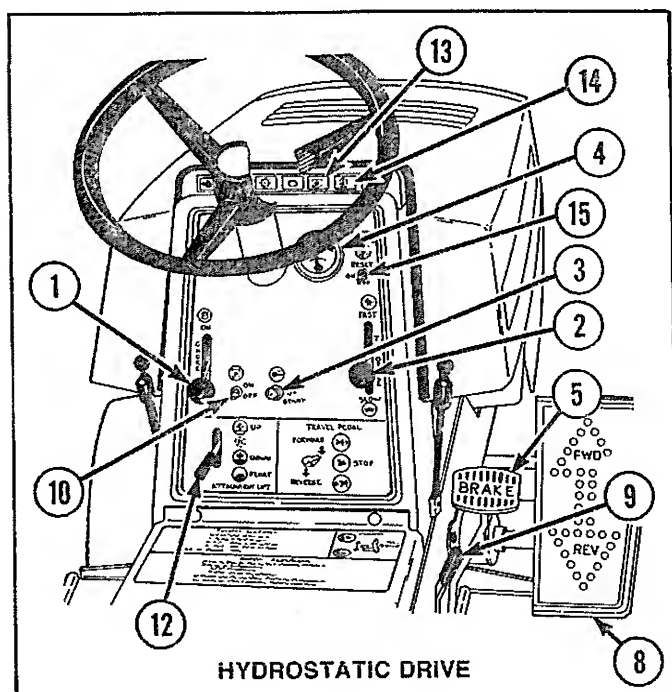
Drive Peerless Geared
Transmission
Speed 4 Forward and 1 Reverse
(All speeds are approximate)
1st-.7 mph (1.1 km/hr)
2nd-2.0 mph (3.2 km/hr)
3rd-3.0 mph (4.8 km/hr)
4th-5.2 mph (8.4 km/hr)
Reverse: 2.1 mph (3.4 km/hr)

CONTROLS

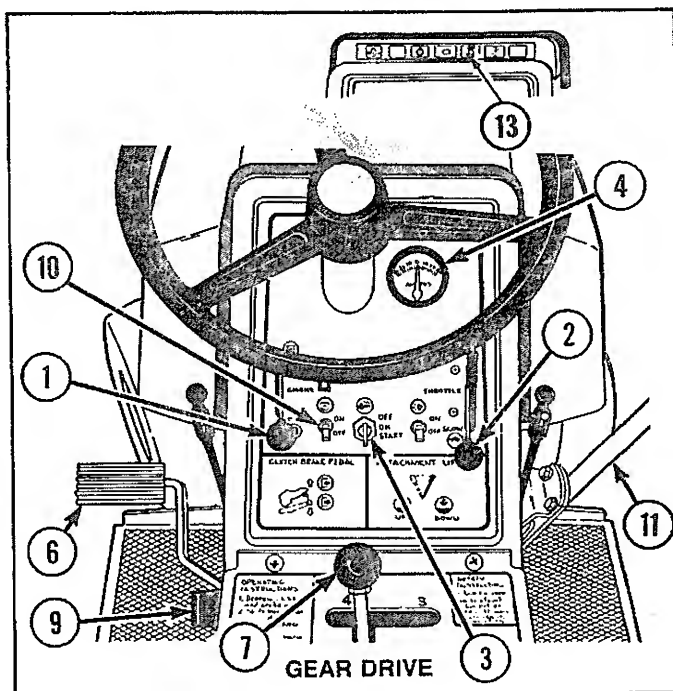
Before operating the tractor, the operator should become familiar with the function and location of each control to ensure proper and efficient operation.

The symbols used on the controls of the tractor are INTERNATIONAL SYMBOLS. These symbols are used all over the World on equipment such as this. These symbols are readily identified in all languages.

The following listed numbers and accompanying information correspond to those numbers assigned to the controls indicated below.



HYDROSTATIC DRIVE



GEAR DRIVE

1. CHOKE — Choke lever UP towards the "ON" position closes choke for starting. Choke lever DOWN to "OFF" position opens choke for operation.

2. THROTTLE — Move throttle lever "UP" one-half way for starting.

3. IGNITION-STARTER SWITCH — This is a four position switch: "OFF", Run with Lights, Run, and Start. To start the engine turn the key to the far right. Release when engine starts. To run lights turn key back to the "ON LIGHTS" position (Run With Lights).

4. AMMETER — Indicates rate of charge and/or discharge from battery.

5. BRAKE PEDAL — Depress pedal to apply brake.

6. CLUTCH/BRAKE PEDAL — Clutch is engaged when pedal is up. Depress pedal to disengage clutch and apply brake.

7. GEAR SHIFT LEVER — For selection of 1st, 2nd, 3rd, 4th and reverse gear.

8. HYDRO TRAVEL PEDAL (Hydrostatic Models Only) — Depress pedal with toe of foot for forward motion. Depress with heel of foot for reverse motion

9. PARKING BRAKE LEVER — To engage "Parking Brake" depress brake pedal and pull back parking brake lever to latch the pedal in the park position. To release the "Parking Brake" depress the brake pedal until the latch is released.

10. ATTACHMENT DRIVE SWITCH — Engages and disengages power to at-

tachments. Move switch lever up to engage clutch and down to disengage.

11. ATTACHMENT LIFT LEVER — When adjusting height of attachments, push thumb button on top of lift lever down to unlatch. Seven positions are available.

12. ATTACHMENT LIFT LEVER (1668L & 1669L) (Optional on Models 1668 & 1669.) Pull lever up to activate the hydraulic lift attachment. Push lever down to lower attachments.

13. PTO DRIVE LIGHT — Indicates when PTO drive is activated.

14. CRUISE LIGHT — (1668 Later Models) - Shines when cruise control is activated.

15. CRUISE CONTROL SWITCH — (1668 Later Models & 1669) - Off-On positions.

PRE-OPERATIONAL CHECKS

The operator should become familiar with the following pre-operational check list, and perform each check prior to starting or operating the Bolens tractor.

1. Check for proper level of engine oil. Fill crankcase through dipstick opening. The oil level is indicated by marks on the dipstick (A), Figure 1, 2 & 2A.

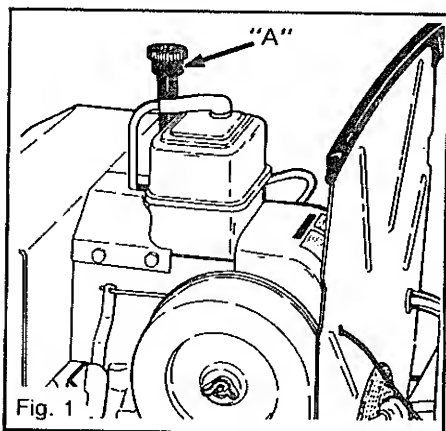


Fig. 1

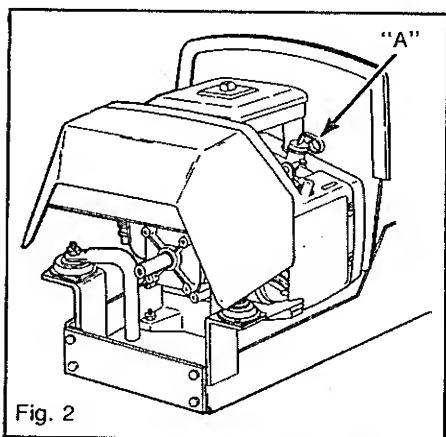


Fig. 2

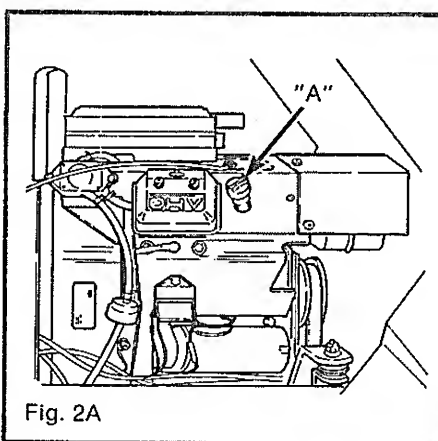


Fig. 2A

Capacity:.....1463, 3-1/4 pts. (1.5L)
1467, 1667, & 1668, 3 pts. (1.4L)
1468, 1669, & 1669L, 3.5 pts. (1.6L)

Refer to engine manual for proper grade and type.

2. Check gasoline tank for sufficient gas supply. Use a good grade of clean, fresh, lead-free gasoline.

DO NOT MIX OIL WITH GASOLINE.

Check to see that vent hole in fuel tank cap is not plugged.



WARNING

DO NOT REFUEL TRACTOR WHILE ENGINE IS RUNNING OR HOT. KEEP SMOKING MATERIALS,

SPARKS AND FLAMES AWAY FROM GAS TANK AND FUEL CONTAINER.

3. Inspect battery for proper electrolyte level and clean cables of dirt and corrosion.

4. Check flywheel screen for debris, and clean regularly.



WARNING

ENGINE MUST BE STOPPED BEFORE CLEANING.

5. Visually check for loose or missing nuts, screws and damaged parts. Replace and tighten before starting engine.

6. Check for proper tire inflation.

Front: 12 to 14 PSI
Rear: 10 to 12 PSI

7. Check seat adjustment for operator comfort. To adjust seat, loosen knobs beneath seat and slide seat forward or back. For different spring suspension, twist spring to loosen. Slide spring to the front for light operators or back for heavy operators. Twist spring to tighten.

BREAK-IN PERIOD

NOTE

These tractors may be shipped without oil in the engine crankcase. Be sure to fill the crankcase with oil before starting the engine.

Use oil recommended in lubrication charts (Pages 17 and 18).

The engine should be placed under load, but not over loaded, from the very beginning as this will improve the final seating of the rings. Do not operate under light loads for prolonged period of time during "break-in."

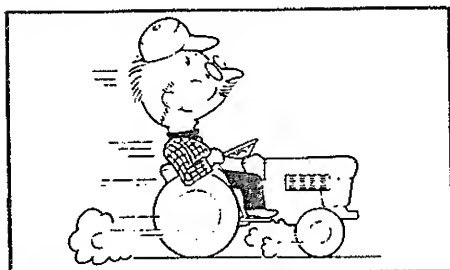
PTO DRIVE CLUTCH BREAK-IN

1. Attach mower or snowthrower.

2. Adjust leveling or lift.

3. With engine running at idle speed, engage and disengage PTO drive switch 10 to 15 times while not cutting or blowing snow. Do this before initial use and after extended storage.

OPERATION



Before driving the Bolens tractor, the operator should be familiar with the location and functions of all controls.



DANGER

CHILDREN SHALL NOT OPERATE THIS TRACTOR BECAUSE AN AVERAGE CHILD IS NOT ABLE TO COPE WITH THIS POWER TOOL.

NORMAL STARTING

1. THE STARTER WILL OPERATE ONLY WHEN THE PTO SWITCH (A) Fig. 3 IS IN "OFF" POSITION, AND BRAKE OR CLUTCH PEDAL IS DEPRESSED.

2. Place transmission in neutral.

3. Move choke lever all the way up (choke on). Experience will indicate need for more or less choking due to variations in temperature, grade of fuel, etc.

4. Move throttle lever up about halfway.

5. Insert ignition key and turn to the right to start engine. Release when engine starts.



CAUTION

IN THE EVENT OF A "FALSE START" (ENGINE GETS UP SUFFICIENT SPEED TO DISENGAGE STARTER BUT FAILS TO CONTINUE RUNNING), THE ENGINE MUST BE COMPLETELY STOPPED BEFORE ANOTHER STARTING ATTEMPT IS MADE. FAILURE TO ALLOW ENGINE TO COME TO A COMPLETE STOP CAN CAUSE DAMAGE

TO THE STARTING MECHANISM AND ENGINE. LIMIT CRANKING (CONTINUOUS) TO A PERIOD OF 30 SECONDS TO PREVENT OVERHEATING OF THE STARTER. IF CRANKED OVER 30 SECONDS, STARTER SHOULD NOT BE OPERATED AGAIN FOR 60 SECONDS TO ALLOW TIME FOR COOLING.

6. Move choke lever down about half-way as soon as engine starts. Gradually push all the way down as the engine warms up. In normal operation, choke lever should be in off (down) position for best engine efficiency and fuel economy.

7. Move throttle lever up to full speed when operating tractor.

8. To stop the engine, place the throttle lever at approximately one-half throttle. Place PTO switch in "OFF" position. Turn the ignition switch to "OFF" and remove key.

NOTE

Leaving seat with attachment switch on will stop engine, due to interlock switch connected to seat.

EMERGENCY STARTING

In the event of electrical failure, get in touch with your DEALER for assistance in locating trouble.

Should the battery be too low on power to start the unit, it is always best to re-

move it and have it re-charged. However, should jumper cables be used the following must be observed:

1. REMOVE BATTERY FROM TRACTOR AND REMOVE BATTERY CELL CAPS WHEN USING JUMPER CABLES.



WARNING

ALWAYS SHIELD EYES WHEN WORKING AROUND BATTERIES. THIS BATTERY CONTAINS SULFURIC ACID. AVOID CONTACT WITH SKIN, EYES OR CLOTHING. IN EVENT OF ACCIDENT, FLUSH WITH WATER AND CALL A PHYSICIAN IMMEDIATELY.

ELECTRIC STORAGE BATTERIES GIVE OFF HIGHLY FLAMMABLE HYDROGEN GAS WHILE BEING JUMPED, AND CONTINUE TO DO SO FOR SOME TIME. DO NOT UNDER ANY CIRCUMSTANCES, ALLOW AN ELECTRIC SPARK OR AN OPEN FLAME NEAR THE BATTERY. DO NOT SET TOOLS ACROSS THE BATTERY TERMINALS AS THIS MAY RESULT IN A SPARK OR SHORT CIRCUIT WHICH MAY CAUSE AN EXPLOSION.

2. BE CERTAIN jumper cables are connected positive to positive and negative from the booster battery to the engine block of the tractor, NOT TO NEGATIVE (-) TERMINAL OF BATTERY.

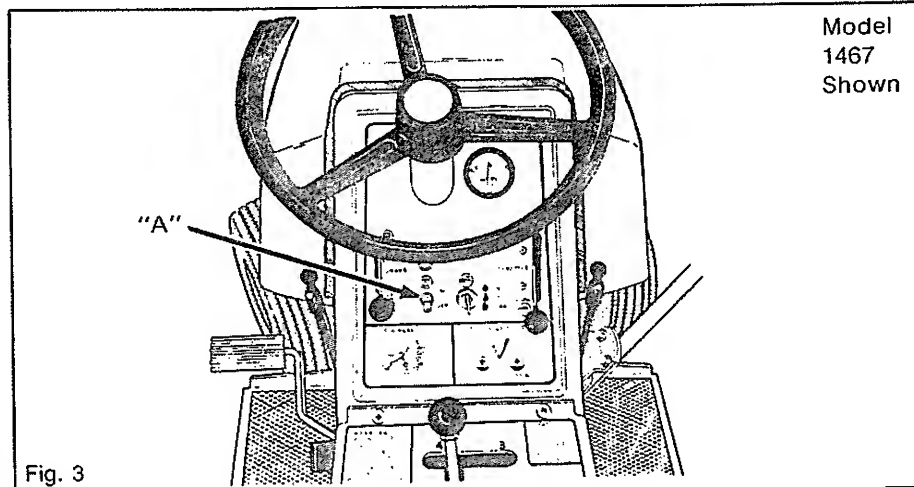


Fig. 3

OPERATION (continued)

3. Place attachment switch in OFF position and depress clutch or brake pedal.

4. Follow procedure outlined under Electric Starting.

COLD WEATHER OPERATION

The following recommendations should be followed if your engine does not start properly in cold weather.

1. When not in use store this unit in a dry protected place.

2. When starting this unit set the throttle at about 1/2 and choke at "ON" positions. Crank the engine till it starts to fire. Move the choke down about 1/2 way. If the engine does not start, set the choke at "OFF" position and start.

3. If the weather drops below 20°F (-6°C) the engine manufacturers recommend using 5W30 or 5W20 oil in the crankcase.

ATTACHMENT DRIVE CLUTCH

Move PTO drive switch (A), Figures 4 and 5, lever to ON to engage PTO drive clutch. Move PTO drive switch lever to OFF to disengage PTO drive.



CAUTION

DO NOT ENGAGE PTO DRIVE WITHOUT AN IMPLEMENT ATTACHED. ALWAYS REMOVE MOWER DRIVE BELT AND UNIVERSAL JOINTS FROM PTO DRIVE SHAFT AFTER ATTACHMENT IS REMOVED. SERIOUS DAMAGE WILL RESULT IF UNIVERSAL JOINTS ARE LEFT ON AND PTO DRIVE IS ENGAGED.

HYDRAULIC ATTACHMENT LIFT
(Optional on Model 1668 & 1669,
Standard on Model 1668L & 1669L)

The attachment lift (B), Figure 4, can be maneuvered while vehicle is at rest or in motion. Lift lever to raise attachments

and push down on lever to lower attachments. When released, lever will automatically return to NEUTRAL position and hold.

To place attachment into the FLOAT position, push lift lever ALL THE WAY DOWN. The float position allows the attached implement to follow ground contours.



CAUTION

BE SURE ATTACHMENT IS COMPLETELY HOOKED UP BEFORE USING HYDRAULIC LIFT. MOVE THE ATTACHMENT SLOWLY THROUGH THE ENTIRE RANGE OF THE LIFT TO CHECK FOR BINDING OR INTERFERENCE BEFORE USING ATTACHMENT. MAKE ADJUSTMENTS IF REQUIRED.

Consult your attachment manual for correct lift lever position.

ATTACHMENT LIFT LEVER

Height of attachments can be varied through 7 positions with the attachment lift lever (C) Fig. 5. To obtain position depress thumb button, move lever to desired position and release.

HYDROSTATIC TRANSMISSION

(Models 1668, 1668L, 1669 & 1669L)

The hydrostatic transmission gives the operator a choice of infinitely variable speeds from 0 to 6.8 mph (0-10 km/hr) forward, and 0-3.4 mph (0-5.5 km/hr) in reverse. Avoid excessive HIGH travel speed whenever possible. Lower travel speeds are best for most jobs such as snow casting or mowing tall or lush grass.

It is required that the tractor operate at FULL THROTTLE. While operating under heavy load conditions, listen to the engine RPM. If the engine begins to labor, do not advance the travel pedal. By letting up on the travel pedal, the ground speed will decrease and the engine speed will increase, thereby allowing engine to maintain constant P.T.O. speed.

NOTE

DO NOT DRIVE THE TRACTOR IMMEDIATELY AFTER START-UP. LET THE ENGINE RUN A FEW MINUTES TO ALLOW TRANSMISSION OIL TO WARM UP FIRST.

LENGTH OF WARM UP WILL BE DETERMINED BY TEMPERATURE. IF TRACTOR HAS A HYDRAULIC LIFT SYSTEM, DO NOT DRIVE UNTIL LIFT SYSTEM IS IN OPERATION.

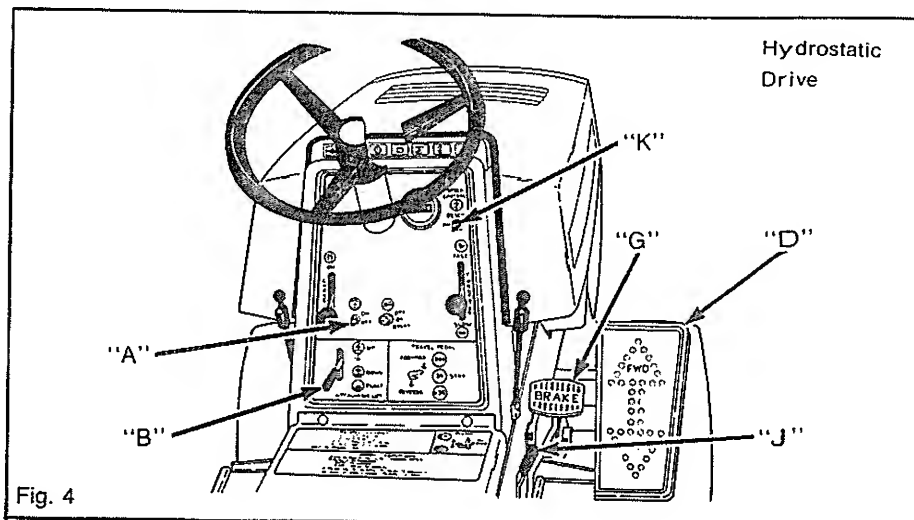


Fig. 4

OPERATION (continued)

WHEN MOVING TRACTOR MANUALLY, PUSH THE UNIT SLOWLY TO PREVENT TEMPORARY LOCK-UP OF THE REAR WHEELS. THE CLICKING NOISE IS CONSIDERED NORMAL.



CAUTION

DO NOT TOW THE TRACTOR WITH ANOTHER VEHICLE. DOING SO WILL CAUSE DAMAGE TO THE DRIVE SYSTEM.

The travel (control) pedal (D) Figure 4 is generally used for dynamic braking while moving. To slow down or stop the tractor while it is in forward motion, gradually apply pressure to the travel control pedal with heel of right foot until tractor comes to a full stop. To slow down or stop the tractor while it is in reverse motion, apply pressure to travel control pedal with toe of right foot until tractor comes to a full stop.

GEAR DRIVE TRANSMISSION (Models 1463, 1467, 1468 & 1667)

This tractor features a four speed PEERLESS GEARED TRANSMISSION (See Fig. 6 for shift pattern and approximate speeds.)

To select the desired speed proceed as follows:

1. Fully depress brake/clutch pedal (H), Fig. 5. Bring tractor to a complete stop.
2. Move shift lever (F) to desired speed with a quick, firm action.
3. Slowly releasing pedal will result in motion.
4. To stop tractor, depress brake/clutch pedal.

NOTE

TO PREVENT DAMAGE TO THE TRANSMISSION, DO NOT SHIFT GEARS WHILE THE TRACTOR IS IN MOTION. TRACTOR MUST BE AT A FULL STOP. AVOID CLASHING GEARS WHEN SHIFTING.

SINCE 1ST GEAR IS NOT NORMALLY USED WHEN BLOWING SNOW, A FLIPPER HAS BEEN PROVIDED TO LOCK OUT 1ST AND AID IN FINDING 2ND.

position and lift parking lock (J) to lock pedal down.



WARNING

ALWAYS LOCK BRAKE WHENEVER LEAVING TRACTOR UNATTENDED.

Proper use of brakes will help prevent damage or personal injury.

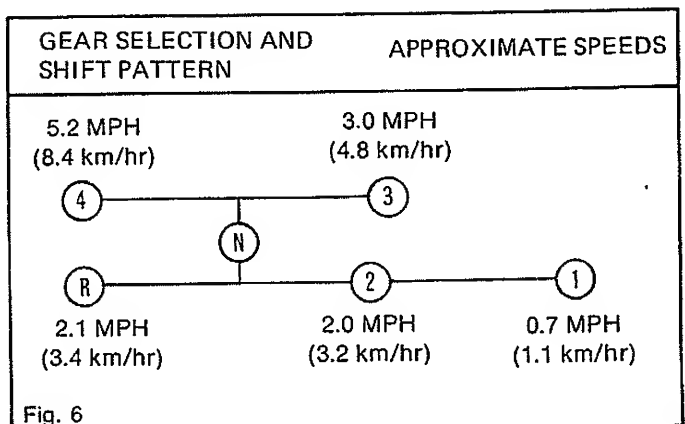
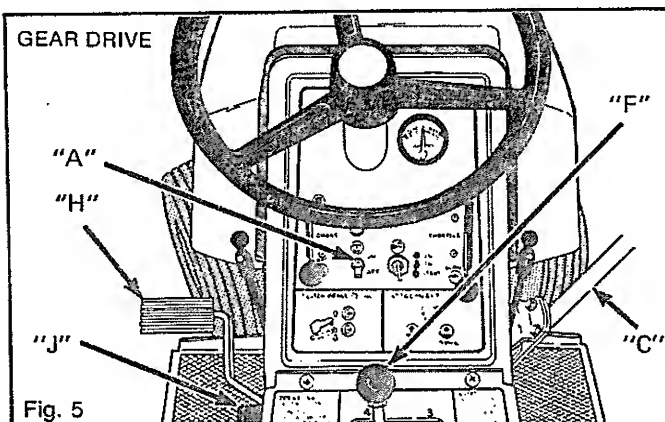
CRUISE CONTROL (Model 1668 S/N 0400101 and later, 1669 & 1669L)

With the unit running and desired speed selected, activate the cruise clutch by pressing the "RESET" end of switch (K), Figure 4.

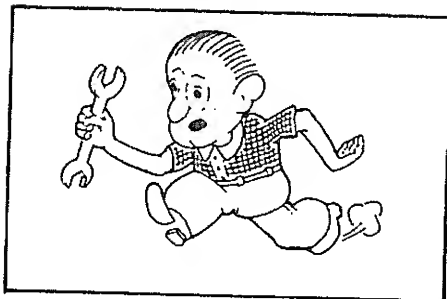
To deactivate the clutch during operation, simply press the "OFF" position of switch or apply the brake. Activating the brake will cut off all power to the clutch and return the transmission to neutral position.

FOOT AND PARKING BRAKE

Depress brake pedal (G) Fig. 4 or clutch/brake pedal (H) Fig. 5 to apply the brakes. To place in park, depress foot pedal to fully apply the brakes, hold pedal in this



MAINTENANCE



A little time spent each day by the operator on preventive maintenance will lead to a longer operating life of the Bolens tractor.

The removal of debris, dirt and grease accumulations are considered normal maintenance practices and can help discover minor difficulties before they become troublesome.

MAINTENANCE CHECKS

Refer to Service instruction Decal under the hood.

LUBRICATION

Refer to Charts on Pages 17 and 18.

ENGINE

The engine oil level must be maintained in the "safe" operating range at all times. Oil level must be between the "ADD" and "FULL" marks on dipstick (A), Figures 1, 2, 2A & 7. Clean area around dipstick so dirt does not fall into crankcase when dipstick is removed. Check daily and add oil as necessary to maintain proper level — **DO NOT OVERFILL**. Oil level must not exceed the "FULL" mark.

On a new engine, change oil after the first 5 hours and thereafter at 25 hour intervals. Drain oil while it is hot for it will then flow more freely and thus carry away more impurities. Drain plug (B), Figure 8 & 9 is located under engine.

After completely draining oil, reinstall drain plug, then remove oil filler cap and refill with oil. Refer to Lubrication Charts pages 17 and 18 for Type and Grade. Check the oil level on the dipstick before adding more. Bring the level up in the safe range but do not exceed the full mark.

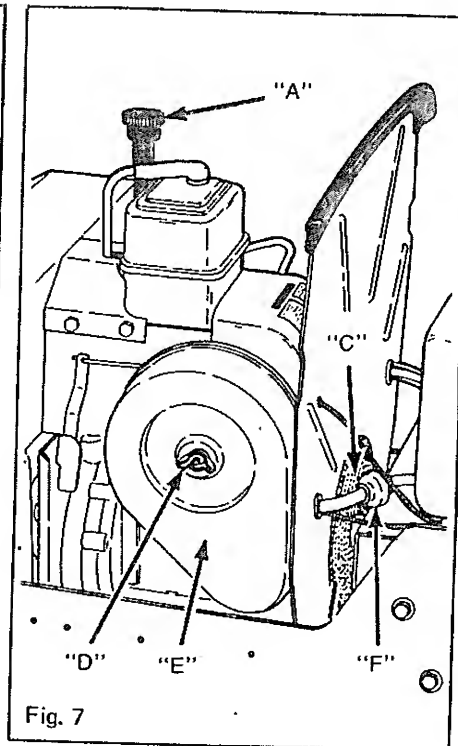


Fig. 7

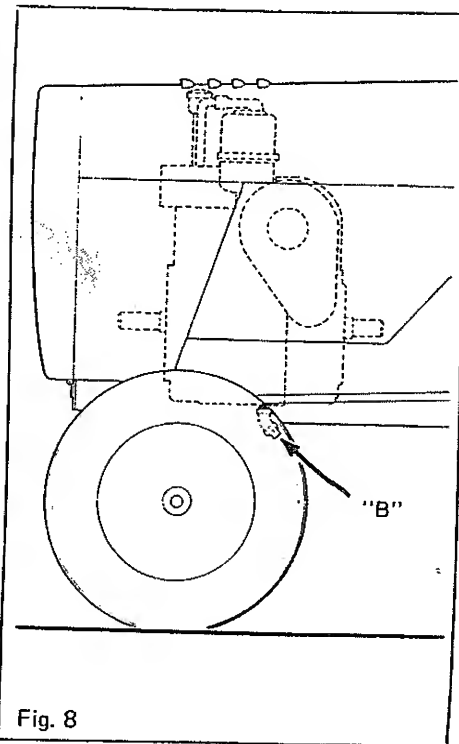


Fig. 8

AIR SCREEN

Clean flywheel air screen (C), Figure 7 & 9, frequently. A dirty air screen and/or engine cause the engine to overheat and damage the engine.

Flywheel screen is located in the same position on Vanguard engines.



WARNING

ENGINE MUST BE STOPPED BEFORE CLEANING.

AIR CLEANER (TECUMSEH ENGINE)

1. Remove wing nut (D), Figure 7 on air cleaner.
2. Remove cover (E) to reach paper air cleaner element.

AIR CLEANER

Under normal operating conditions,

disassemble and service air cleaner components every 10 hours of operation. Do this more frequently if extremely dusty or dirty conditions prevail. The dry type element is cleaned by gently tapping on a flat surface — when doing this, be careful not to damage gasket surfaces on element.

DO NOT OIL ELEMENT. DOING SO WILL MATERIALLY AFFECT THE PAPER ELEMENT. USE ONLY A TECUMSEH ELEMENT.

Wipe dirt or dust accumulation from cover, including base plate. Dry type elements should be replaced when no longer serviceable.

Reverse procedure to reassemble.

The importance of maintaining an air cleaner in proper condition cannot be over-emphasized!

Improper air cleaner maintenance can create engine damage which the engine manufacturer will not warrant.

MAINTENANCE (continued)

AIR CLEANER (B & S ENGINES)

Clean and re-oil foam pre-cleaner at three month intervals or every 25 hours, whichever occurs first.

NOTE

Service air cleaner more often under dusty conditions.

1. Remove knob and cover, Figures 10 & 10A.
2. Remove foam pre-cleaner.
3. a. Wash foam pre-cleaner in liquid detergent and water.
b. Wrap foam pre-cleaner in cloth and squeeze dry.
c. Saturate foam pre-cleaner in engine oil. Squeeze to distribute and remove excess oil.
4. Reinstall foam pre-cleaner.

For Vanguard:

- a. Install pre-cleaner in cover with foam toward cover.
- b. Install cartridge in cover with tabs on cartridge in slots of cover.
5. Reassemble cover and screw down tight.

Yearly or every 100 hours, whichever occurs first, replace paper cartridge. (Service more often if necessary.) Clean by tapping gently on flat surface. If very dirty replace cartridge, or wash in a low or non-sudsing detergent and warm water solution. Rinse thoroughly with flowing water from inside out (for Vanguard, from mesh side), until water is clear. Cartridge must be allowed to stand and air dry thoroughly before using.



CAUTION

PETROLEUM SOLVENTS ARE NOT

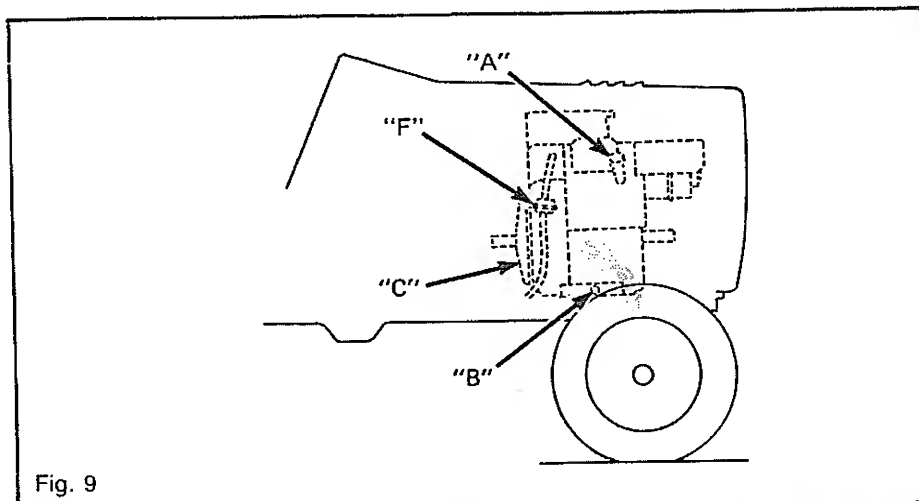


Fig. 9

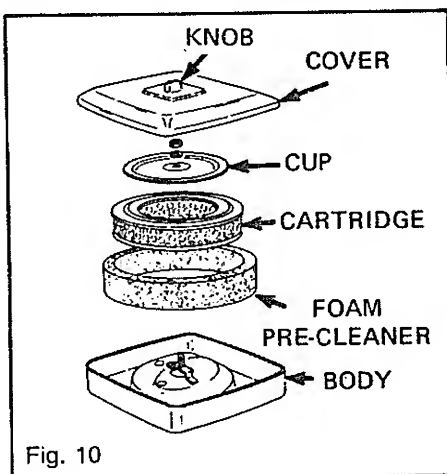


Fig. 10

TO BE USED TO CLEAN CARTRIDGE. THEY MAY CAUSE DETERIORATION OF THE CARTRIDGE. DO NOT OIL CARTRIDGE. DO NOT USE PRESSURIZED AIR.

The importance of maintaining an air cleaner in proper condition cannot be over-emphasized!

Improper air cleaner maintenance can create engine damage which the engine manufacturer will not warrant.

OIL FILTER (VANGUARD)

Replace oil filter every 100 hours. Before installing new filter, lightly oil filter gasket with fresh clean engine oil. Screw filter on by hand until gasket contacts filter adapter. Tighten 3/4 turn farther. Start and run engine for 30 seconds and stop engine.

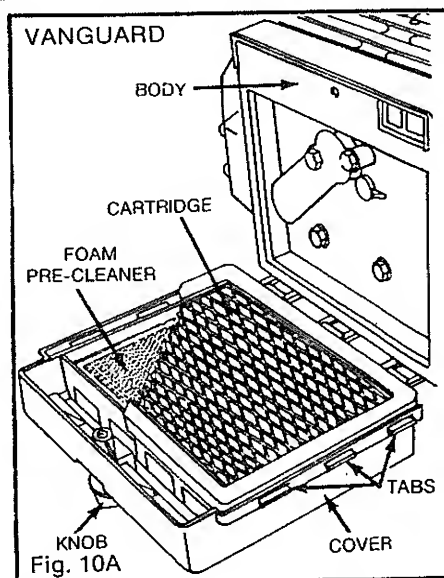
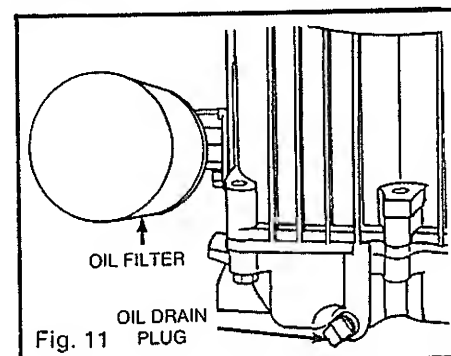


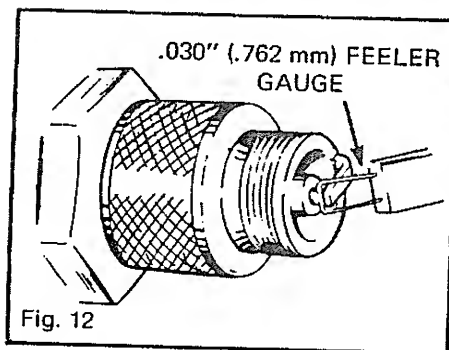
Fig. 10A



Recheck oil level and refill if required. Restart engine and check for oil leaks.

Contact your nearest Briggs & Stratton dealer for oil filter specifications.

MAINTENANCE (continued)



FUEL FILTER

There is a fuel filter (F), Figure 7 & 9, in the line from the fuel tank. This filter is a throw away type.

When it shows excessive dirt in the inside it should be replaced.

When replacing the filter turn off the fuel valve. This valve is located on the underside of the tank. Access is from the underside of the tractor. Open valve again after filter has been replaced.

SPARK PLUG (Fig. 12)

Every 100 hours remove plug, check condition and reset at .030 inch (.762 mm) or replace plug if needed. Good operating conditions are indicated if plug has light coating of gray or tan deposit. A dead white, blistered coating could indicate overheating. A black (carbon) coating may indicate an "overrich" fuel mixture caused by clogged air cleaner or improper carburetor adjustment. Do not service plug in poor condition — best results are obtained with a new plug.

NOTE

CLEANING OF SPARK PLUGS IN CLEANING MACHINES THAT USE ABRASIVE GRIT IS NOT RECOMMENDED. SPARK PLUGS SHOULD BE CLEANED BY SCRAPING OR WIRE BRUSHING AND WASHING WITH A COMMERCIAL SOLVENT.

CARBURETOR

Carburetor is adjusted at the factory and should not have to be reset. If black ex-

haust is noted, check the air cleaner first. An "overrich" mixture is usually caused by a poorly serviced, clogging air cleaner element, not an improperly adjusted carburetor.

If readjustment becomes necessary, refer to engine manual supplied.

BATTERY

Keep cables and terminals clean and apply a light coat of petroleum jelly or oil for protection.



WARNING

ALWAYS SHIELD EYES WHEN WORKING AROUND BATTERIES. THIS BATTERY CONTAINS SULFURIC ACID. AVOID CONTACT WITH SKIN, EYES OR CLOTHING. IN EVENT OF ACCIDENT, FLUSH WITH WATER AND CALL A PHYSICIAN IMMEDIATELY.

ELECTRIC STORAGE BATTERIES GIVE OFF HIGHLY FLAMMABLE HYDROGEN GAS WHILE BEING JUMPED, AND CONTINUE TO DO SO FOR SOME TIME. DO NOT UNDER ANY CIRCUMSTANCES, ALLOW AN ELECTRIC SPARK OR AN OPEN FLAME NEAR THE BATTERY. DO NOT LAY TOOLS ACROSS THE BATTERY TERMINALS AS THIS MAY RESULT IN A SPARK OR SHORT CIRCUIT WHICH MAY CAUSE AN EXPLOSION.

NOTE

When servicing the battery, be sure battery cables are disconnected before attempting removal of the battery from the tractor. Always disconnect negative (—) cable first. When installing the battery, always check the polarity of the battery terminals to be sure the battery is not reversed. The negative terminal (—) is ground.

Apply a light coat of petroleum jelly or oil to the inside of the clamp terminals and over the bolt stud before connecting terminals. Always connect the negative terminal (—) last.

INTERLOCK SWITCHES

This unit is equipped with 3 INTERLOCK SAFETY SWITCHES (4 if equipped with cruise control). The function of these safety switches is to insure SAFE START-UP of the unit.

1. One interlock switch is incorporated into the PTO Drive Switch.
2. The second switch is below the seat (inside the seat on later models), (E), Figure 13. This switch should be activated when back edge of seat support (F) is depressed 5/8" (16 mm). If not, loosen bracket (G) and move to correct location. The switch can also be activated by raising the seat and lifting the interlock button UP.
3. The third switch (H), Figures 16 and 17, is on the brake linkage. The switch button should depress approximately 3/32" (2 mm) when the brake is applied. If not, adjust by loosening nuts on switch and moving switch forward or back. Retighten nuts.

PNEUMATIC TIRES

Keep both front and rear tires inflated evenly.

Front: 12 to 14 PSI

Rear: 10 to 12 PSI

Check air pressure regularly with a low pressure gauge. Operating with incorrect pressures may damage tires.

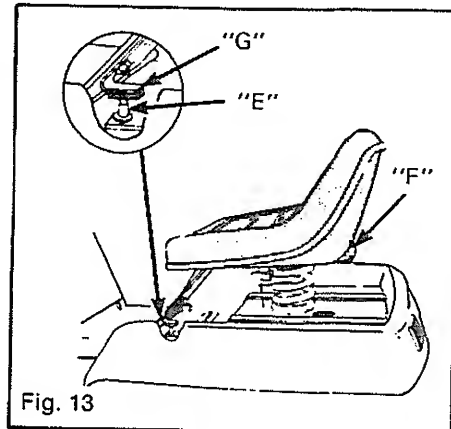


Fig. 13

MAINTENANCE (continued)

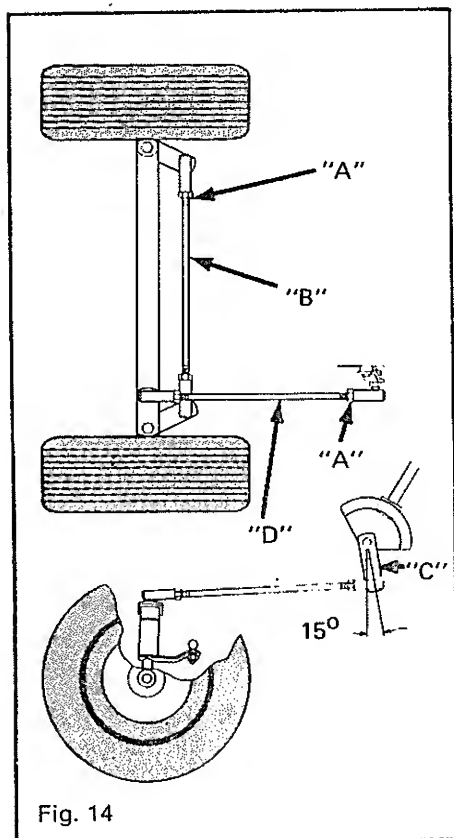


Fig. 14

FRONT WHEEL ALIGNMENT (Fig. 14)

1. Loosen locknuts (A). Adjust tie rod (B) until wheels are parallel to each other.
2. With arm (C) positioned approximately 15° to the rear, adjust drag link

Model 1668

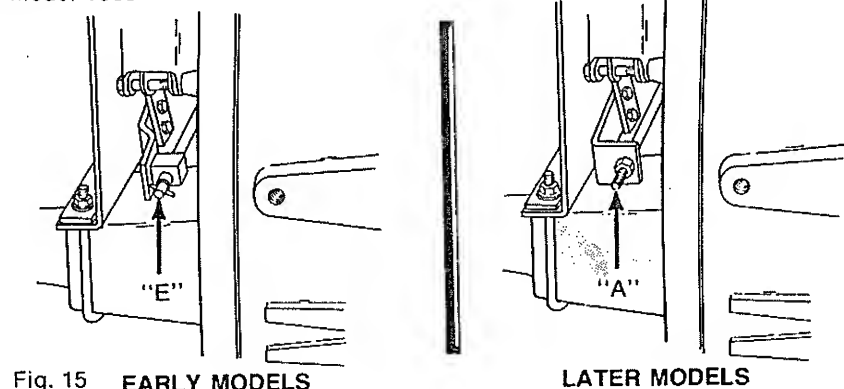


Fig. 15 EARLY MODELS

LATER MODELS

(D) till wheels are parallel to the center-line of the tractor.

FUSE (Models 1467, 1468, 1668 S/N 0400101 and later, 1669 & 1669L)

A fuse is located in wiring harness at the solenoid. Check tractor to find the cause of electrical failure and correct.

CIRCUIT BREAKER (Models 1463, 1667 and 1668 S/N 0100101 thru 0399999)

If electrical system fails while operating engine, shut engine off and let tractor stand a few minutes to allow circuit breaker to cool and reset. The circuit breaker is mounted to the positive (+) terminal of the ammeter.

BRAKE ADJUSTMENT (Fig. 15) (Model 1668, 1668L, 1669 & 1669L)

If it only requires light foot pressure to latch the parking brake, or if the parking brake does not hold the tractor when the brake pedal is latched, the brake system requires adjustment.

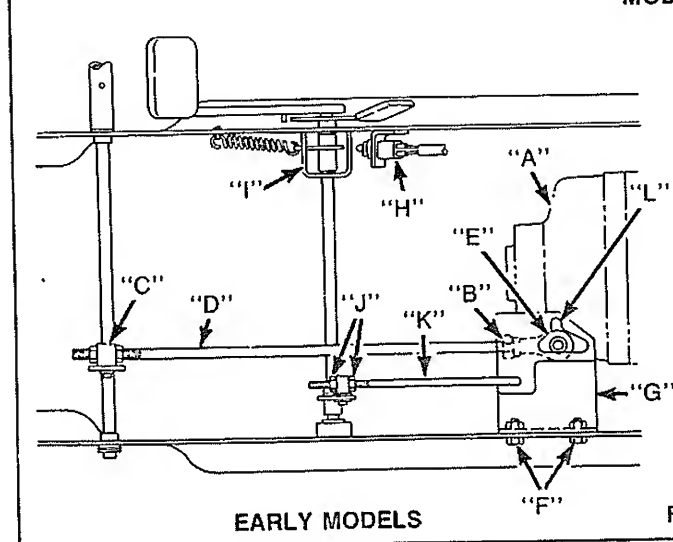
With the parking brake released, proceed as follows:

1. On early models turn brake rod "E" and on later models turn hex nut "A" until a gap of .010 (.25 mm) is achieved between brake disc and brake pad.

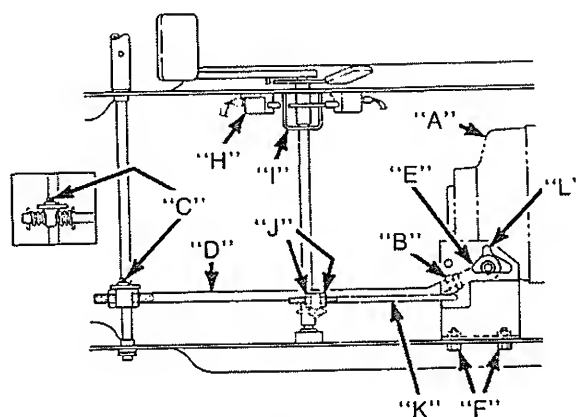
With brake pedal fully released, brake disc must rotate freely.

The tractor should not move when the brake is locked in the FIRST position.

MODEL 1668



EARLY MODELS



LATER MODELS

Fig. 16

MAINTENANCE (continued)

HYDROSTATIC MAINTENANCE (Model 1668, 1669 & 1669L)

Remove ignition key. Remove all dirt from around transmission filler area. Clean transmission cooling fins (A), Figure 16 periodically. If tractor is operated in a dusty environment, check and clean cooling fins frequently.

Change oil filter as called out in Maintenance Chart, Page 20. The filter is a throw away type and is located below the battery.

HYDROSTATIC PEDAL ADJUSTMENT (Model 1668, 1669 & 1669L)

The Pedal was adjusted at the factory with tip of pedal approximately 45° forward of the vertical center line. If the operator would prefer to either increase or decrease this angle for his personal comfort, the pedal can be adjusted as follows: (See Figure 16.)

1. Loosen hex nut (B).
2. Remove cotter pin (C) and remove pivot block from control arm.
3. Turn rod (D) into rod end (E) to increase the pedal angle. Turn rod out of rod end to decrease the pedal angle.
4. Replace pivot block and cotter pin. Retighten hex nut (B) against rod end (E).

HYDROSTATIC NEUTRAL ADJUSTMENT (Model 1668, 1669 & 1669L)

The Hydrostatic neutral is adjusted at the factory. If the transmission should

need adjustment, the following procedure should be used.

With the transmission cold and engine off, check the fluid in transmission reservoir. It should be to the level indicated on dipstick.

Start engine and release parking brake. If the tractor creeps Forward or Backward, the Neutral position needs adjustment.

Adjust Neutral as follows:

1. Securely block up rear of tractor, so the rear wheels clear the ground.
2. Start the engine and release the brake.
3. Loosen capscrews (F) Figure 16, and move support plate (G) forward if wheels rotate in forward direction, or toward rear if wheels rotate in reverse.
4. Tighten capscrews securing support plate when wheels no longer rotate.
5. Stop engine and lock brake arm against the stop (I), Figure 16.
6. Loosen jam nuts (J) and turn rod (K) until pin lightly contacts slot (L) of neutral plate.
7. Tighten jam nuts (J).

**NOTE - EXCESSIVE ADJUSTMENT
MAY CAUSE PIN BREAKAGE.**

BRAKE ADJUSTMENT (Models 1463, 1467, 1468 & 1667)

When the brake will no longer hold the tractor with brake lock set in the third or

lowest notch, the brakes should be adjusted. To adjust loosen nut (A) Figure 17 on brake rod. With the foot pedal returned to its uppermost position, adjust lock nut (B) till there is a gap of 1/16" (1.5 mm) between lock nut and pivot block (C). Retighten nut (A) till it touches pivot block.

When brake lock is set in the first position the tractor should not move.

CLUTCH ADJUSTMENT (Models 1463, 1467, 1468 & 1667)

The clutch generally should not require any adjustment. If for any reason the clutch is not disengaging or engaging correctly, adjust as follows:

When foot pedal has fully returned to its upper position, screw lock nut (D), Figure 18, till there is a gap of 1/8" (3 mm) between pivot block (E) and lock nut (D).

TRANSAXLE (Models 1463, 1467, 1468 & 1667)

The transaxle assembly is filled at the factory with SAE EP90 transmission fluid. Check transmission fluid level once a year. With tractor on flat surface remove plug (A), Figure 18, on front of transmission. If fluid is not to plug level, add fluid at filler plug (B) till correct level is reached. Oil capacity is 4 pints (1.9 liter).

DRIVE BELT REMOVAL (Models 1463, 1467 & 1468)

Belt can be either removed from

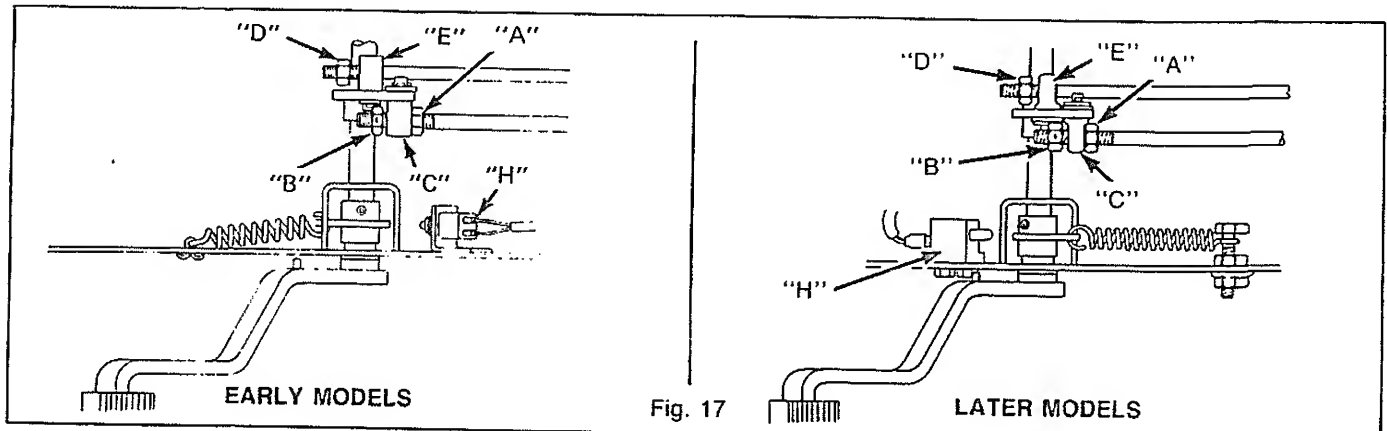
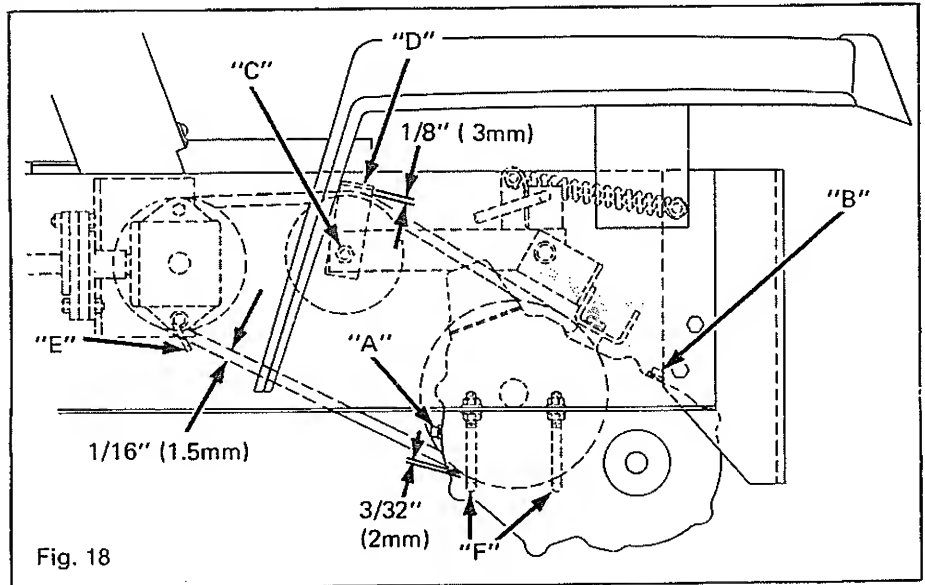


Fig. 17

MAINTENANCE (continued)

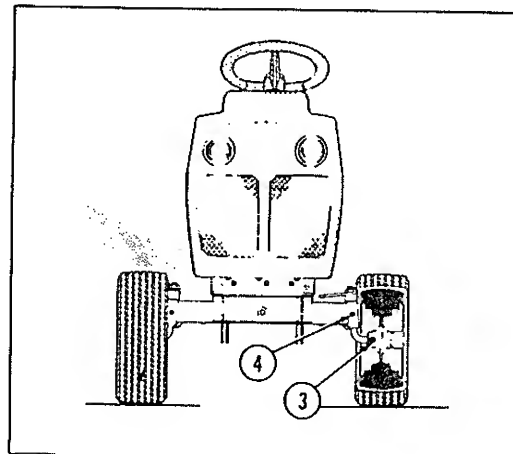
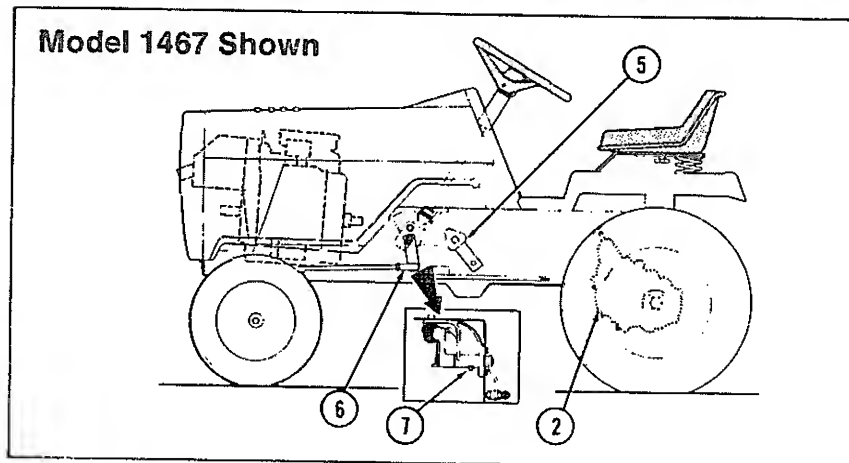
underneath tractor or by removing the fender.

With foot pedal locked down, loosen nut (C) on idler arm and slide belt guide (D) away from the belt. Loosen belt guide (E) on the gear box and loosen guides (F) on the transmission pulley. Remove belt and replace with new one. With foot pedal in its upper most position refasten belt guide (D) to dimension shown in Figure 18.



MAINTENANCE (Continued)

LUBRICATION CHART (MODELS 1463, 1467, 1468 & 1667)



LUBRICATION CHART

LUBRICATION REQUIRED		LENGTH OF OPERATION	TYPE OF LUBRICATION	AMOUNT REQUIRED
1. Engine Crankcase —		First 5 Hrs.	SC, SD or SE Engine Oil	MODEL 1467 3 pts. (1.4L)
Average Temperature	(Spring, Summer, Autumn) (+100° F to 20° F) (+38° C to -6° C)	25 Hrs.*	SC, SD or SE SAE 30 10-W30, 10W-40 Oil	MODELS 1463 & 1667 3-1/4 Pts. (1.5L)
	(Winter) (+20° F to Below Zero) (+100° C to Below Zero)	25 Hrs.*	SC,SD or SE SAE5W-30 or 5W-20 Oil	MODEL 1468 3-1/2 Pts. (1.6L)
2. Transmission —		Check Once a Year	EP90 gear lube or equivalent	Add to plug level (See Page 14)
3. Front Wheel Bearings		10 Hrs.	Grease with Multi-Purpose	1-2 Strokes
4. Front Wheel Spindles		10 Hrs.	Grease with Multi-Purpose	1-2 Strokes
5. Clutch/Brake Pedal Shaft and Bushings)		10 Hrs.	Oil	Small Amount
6. Tie Rod Ends and Drag Links —		10 Hrs.	Oil	Small Amount
7. Steering Shaft —		10Hrs.	Grease with Multi-Purpose	1-2 Strokes

* More often under extreme conditions.

NOTE

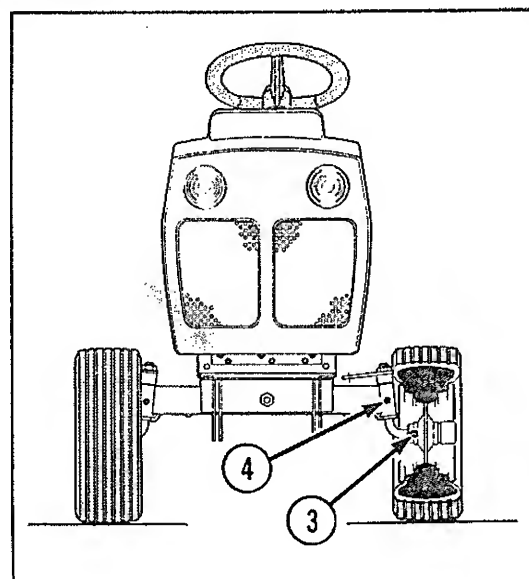
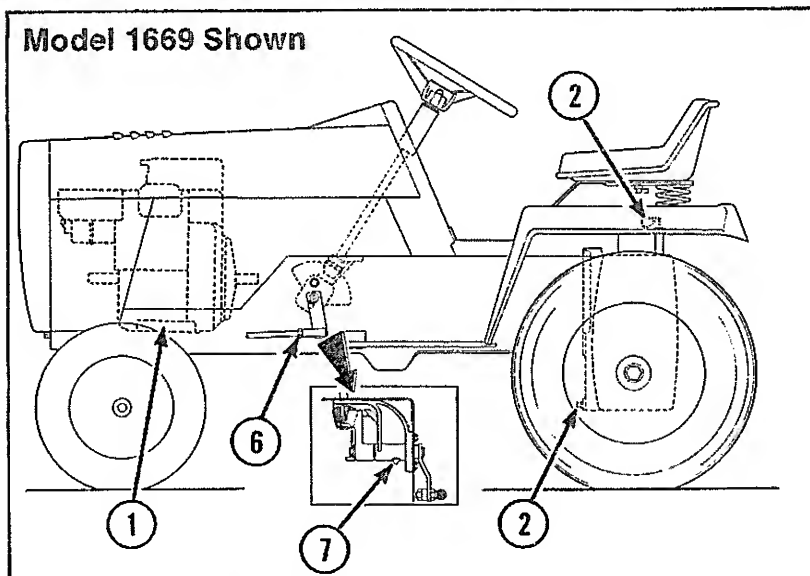
A hand type grease gun is recommended when greasing your unit. Hi-pressure type grease guns

could cause damage to the fittings and bearing seals. Lubricate all linkages, levers and pins not equipped with

grease fittings with an oil can once a week or more often depending on operating conditions.

MAINTENANCE (continued)

LUBRICATION CHART (MODELS 1668, 1668L, 1669 & 1669L)



LUBRICATION CHART

LUBRICATION REQUIRED		LENGTH OF OPERATION	TYPE OF LUBRICATION	AMOUNT REQUIRED
1. Engine Crankcase —		First 5 Hrs.	SF, SC, SD or SE Engine Oil	MODELS 1669 & 1669L 3-1/2 pts. (1.6L)
Average Temperature	(Spring, Summer, Autumn) (+100°F to 20°F) (+38°C to -6°C)	25 Hrs.*	SF, SC, SD or SE SAE 30 Oil 10W-30, 10W-40	MODELS 1668 & 1668L 3 Pts. (1.4L)
	(Winter) (+20° to Below Zero) (-6°C to Below Zero)	25 Hrs.*	SF, SC, SD or SE SAE 5W-30 or 5W-20 Oil	
2. Hydrostatic Transmission — (Shipped with SAE 20 oil)		Check Weekly or 10 Hrs.	20°F (-6°C) - Above SAE 20 Oil, Type SC,SD or SE	Add to "FULL" Mark on Dipstick 8 Qts. (7.6L)
			20°F (-6°C) - Below Drain and refill with Hydraulic/trans- mission fluid	
		When Oil is Discolored Dirty or after 100 Hrs.	Drain and refill as follows 20°F (-6°C) — Above SAE 20 Oil Type SC, SD or SE 20°F (-6°C) — Below Drain and refill with Hydraulic/trans- mission fluid	
3. Front Wheel Bearings —		10 Hrs.	Grease with Multi-Purpose	1-2 Strokes
4. Front Wheel Spindles —		10 Hrs.	Grease with MultiPurpose	1-2 Strokes

MAINTENANCE (continued)

LUBRICATION CHART

5. Foot Pedal Shaft (not shown) —	10 Hrs.	Oil	Small Amount
6. Tie Rod Ends and Drag Links —	10 Hrs.	Oil	Small Amount
7. Steering Shaft —	10 Hrs.	Grease with Multi-Purpose	1-2 Strokes
8. Brake Pedal Bushings (not shown) —	10 Hrs.	Oil	Small Amount

*More often under extreme conditions.

NOTE

A hand type grease gun is recommended when greasing your unit. Hi-pressure

type grease guns could cause damage to the fittings and bearing seals. Lubricate all linkages, levers and pins not equipped

with grease fittings with an oil can once a week or more often depending on operating conditions.

STORING YOUR BOLENS TRACTOR

Always keep your BOLENS tractor in a dry protected place when not in use to prolong its usefulness and appearance. With year around use, it is not necessary to "store" the tractor; but when it is not to be used for some time, it should be prepared for storage in the following manner:

1. Completely clean all accumulated dirt or trash from all parts, especially engine fins and flywheel screen.

2. Wipe oil or a rust preventive on any parts that may rust. Touch up any area where paint has been chipped or worn off on tractor.

3. Drain gas tank and carburetor.

4. Drain oil from crankcase while engine is still hot. Refill with the appropriate oil per lubrication chart.

5. Check fuel filter and replace if dirty.

6. Remove, clean and regap spark plug and put a small amount of oil (SAE 30) into cylinder. Turn the engine over a few times to fully lubricate the cylinder walls, valve seats and valve stems. This can be done by engaging the key starter briefly. Replace spark plug.

7. BATTERY — Keep terminal posts cleaned of corrosion salts and coat with petroleum jelly or grease. Keep cables clean. Stored battery must be kept fully

charged and with all cells filled. Store at cool temperature, 20°F (-7°C) to 50°F (10°C). Check each two months and charge as necessary.

8. The air cleaner should be cleaned and sealed off with a plastic bag or facsimile, for the duration of the storage period.

9. If tractor is stored with an attachment mounted on it, the attachment MUST be lowered to the ground, and the attachment switch in OFF position.

10. It is highly recommended that machines be stored inside a building through the winter. If this is not possible, the engine should be protected from snow and ice with a covering of waterproof material.

Bolens reserves the right to change specifications, add improvements, or discontinue the manufacture of any of its equipment without notice of obligation to purchasers of its equipment.

Bolens' approval of the use of attachments manufactured by allied

manufacturers is limited to assurance that such use will not void Bolens warranty of the Bolens equipment to which the allied manufactured attachments are adapted. The responsibility for the design, performance, durability, safety and operation, service repair availability, and warranty obligation remain with the allied manufac-

turer. Bolens specifically excludes from its warranty obligation all such allied manufactured attachments.

Bolens warranty will be voided if unapproved attachments are adapted to use with Bolens equipment and are so used.

MAINTENANCE (continued)

MINOR TROUBLESHOOTING CHART

IF TRACTOR ACTS IN FOLLOWING MANNER:	CHECK FOR POSSIBLE CAUSE												
	CLEAN OFF ENGINE FINS	FLYWHEEL SCREEN (CLEAN)	FAULTY IGNITION*	FAULTY SPARK PLUG	EMPTY FUEL TANK	BATTERY	CARBURETOR	OIL	AIR CLEANER (CLEAN)	CHOKE	CHECK COOLING FINS ENGINE	CHECK INTERLOCK SWITCHES	SEE YOUR BOLENS DEALER
Engine will turn over but won't start			X	X	X		X			X			X
Engine will not turn over						X						X	X
Starts only after repeated tries			X	X			X			X			X
Stalls in a few seconds					X		X						X
Stalls when hot	X	X	X	X	X		X	X	X				X
Idles rough			X	X			X			X			X
Engine overheats	X	X	X				X	X	X		X		X

* See Your Authorized Dealer.

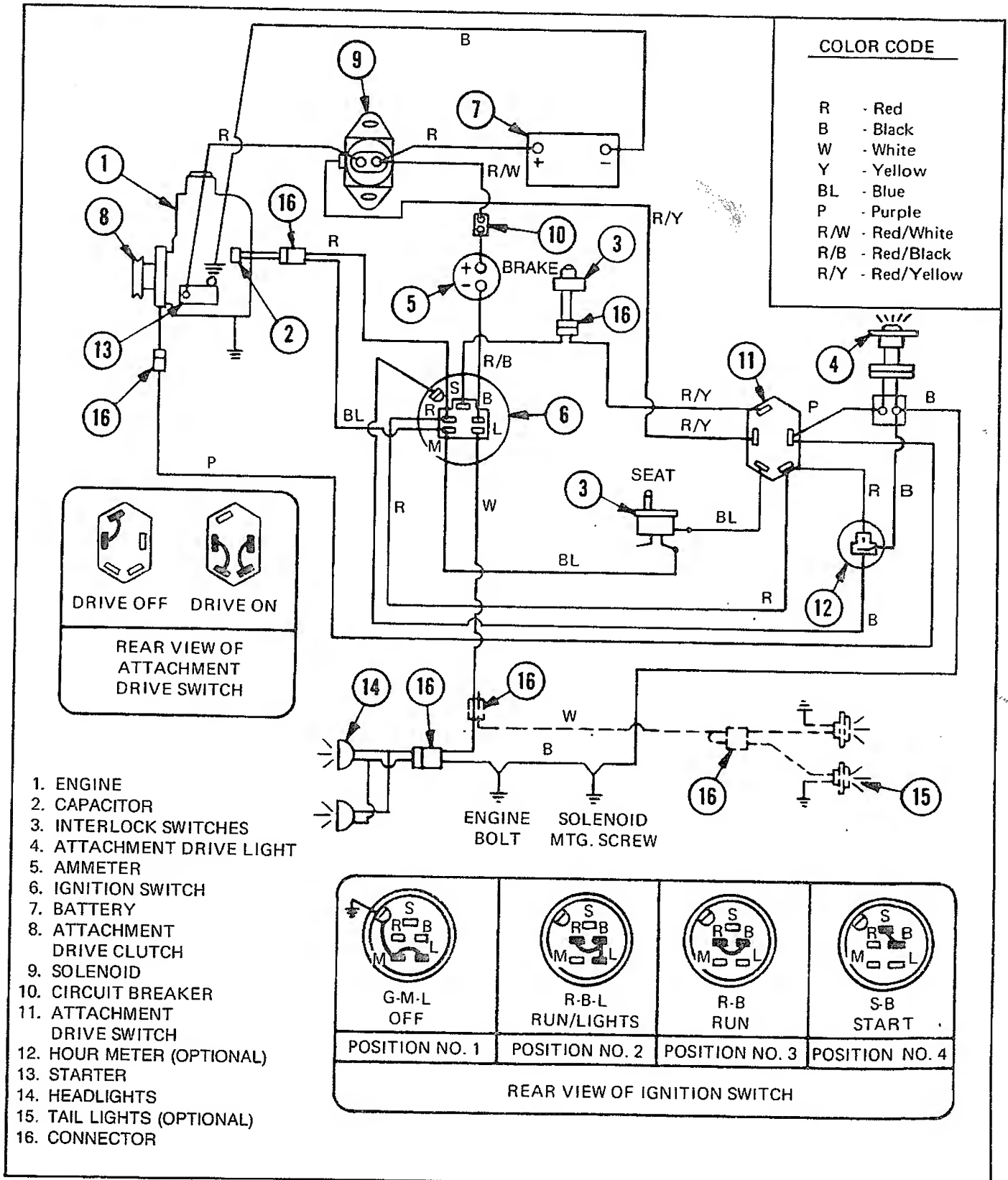
MAINTENANCE CHART

MAINTENANCE REQUIRED	LENGTH OF OPERATION	TYPE OF MAINTENANCE
Engine Cooling Air Screen —	100 Hrs. (or yearly)*	Brush Clean
Engine Air Cleaner —	25 Hrs.*	See page 10
	When no longer serviceable	
Cooling Fins — (Engine) —	100 Hrs. (or yearly)*	Clean — Use Air Hose if Available
Spark Plug —	100 Hrs.	Service or Replace
Fuel Filter —	100 Hrs.	Replace
Battery —	25 Hrs.	Check Water Level — Add As Necessary
Cooling Fins — (Hydrostatic) —	Daily or 10 Hrs.*	Clean — Use Air Hose if Available
Tires —	30 Hrs.	Check for Damage and Air Pressure
Transmission Filter —	After first 5 Hrs. Then after every 100 hrs.	Change — Use Bolens Filter **
Brake —	As Required	Adjust Linkage

* More often under extreme conditions. ** or equivalent.

WIRING DIAGRAM

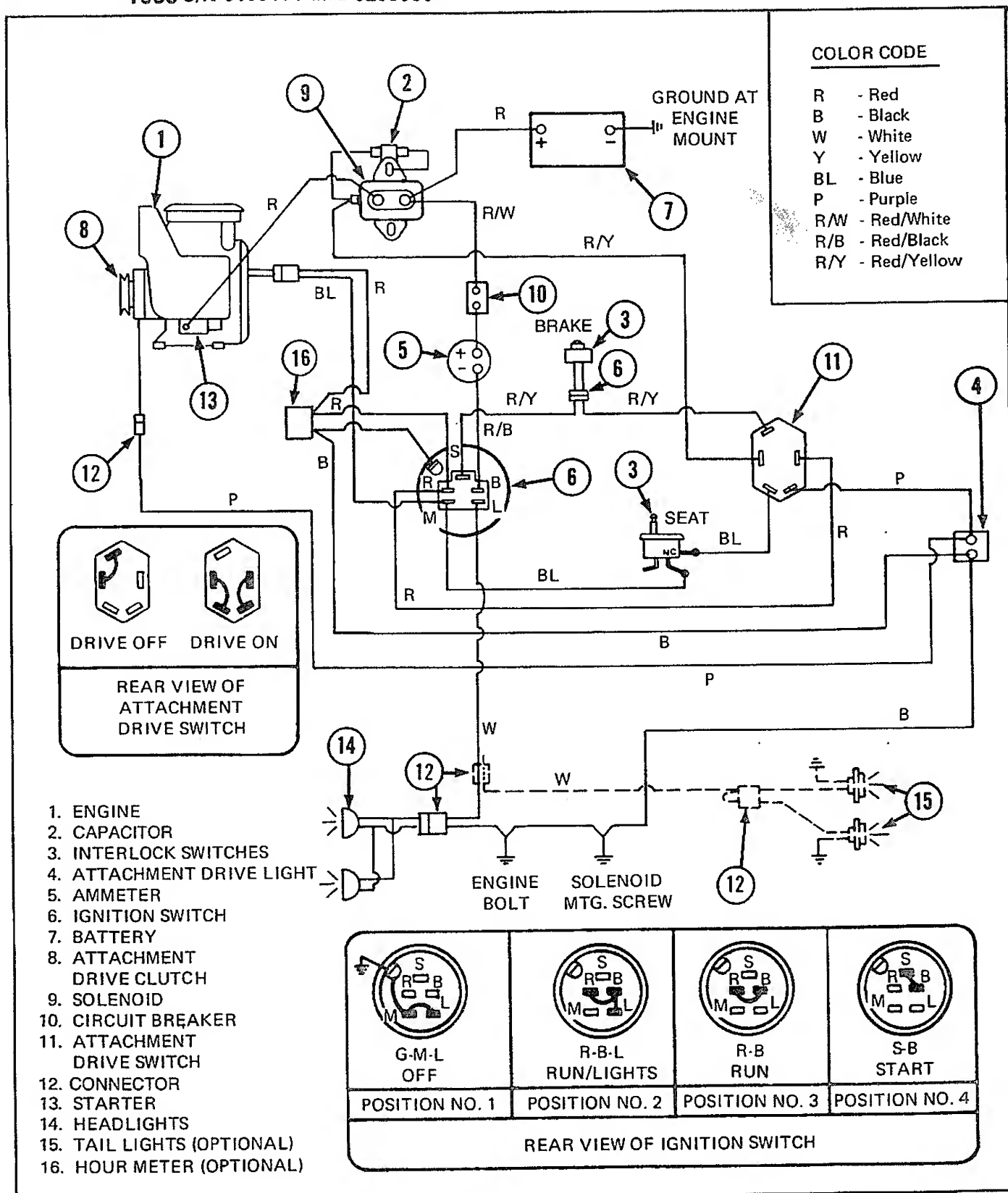
MODEL 1463



WIRING DIAGRAM

MODELS 1667

1668 S/N 0100101 thru 0299999

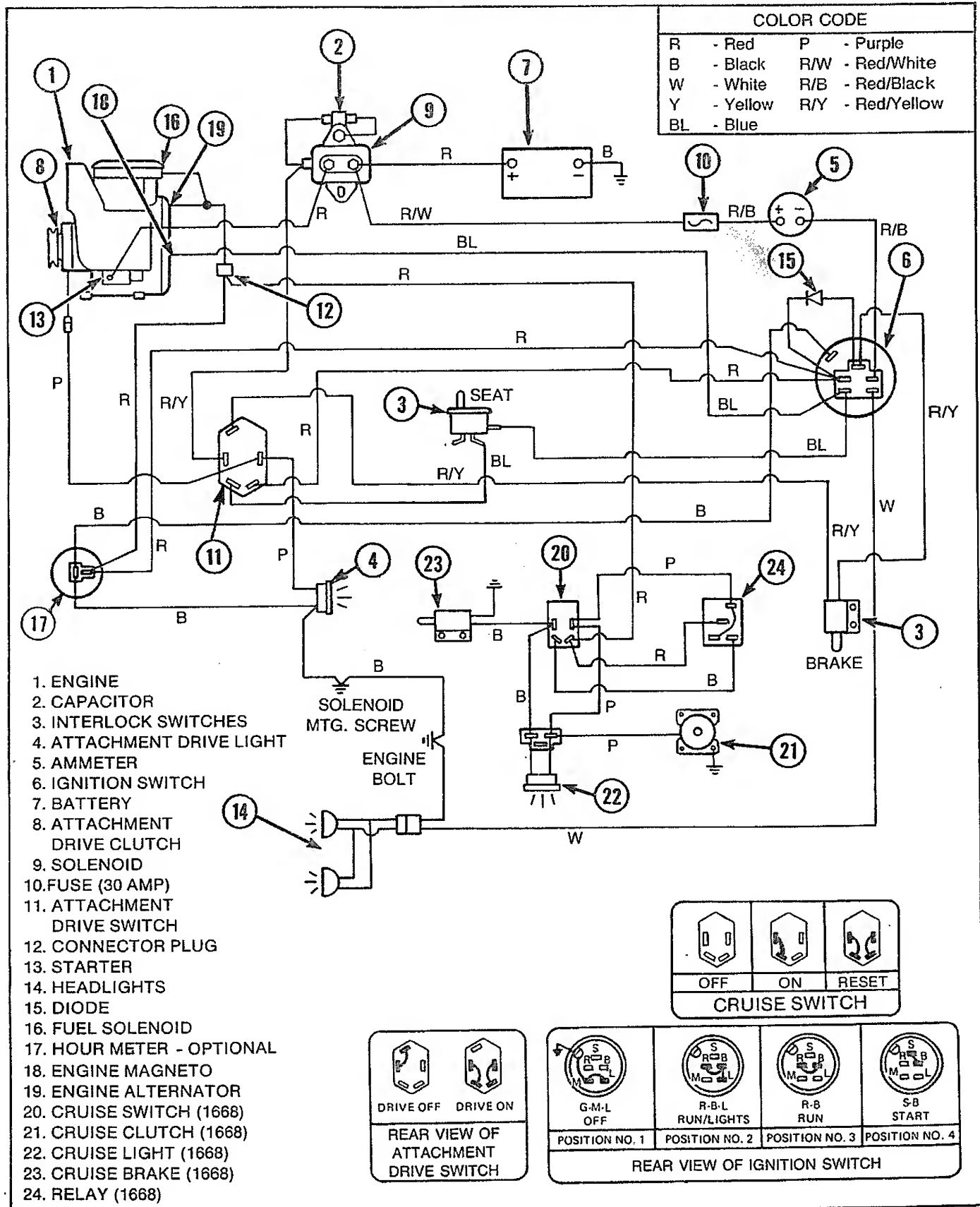


MODEL 1668 S/N 0300101 thru 0399999



WIRING DIAGRAM

Model 1467 AND 1668 S/N 0400101 thru 0599999



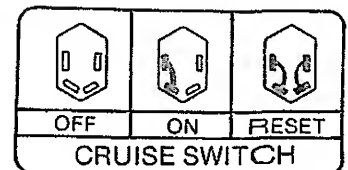
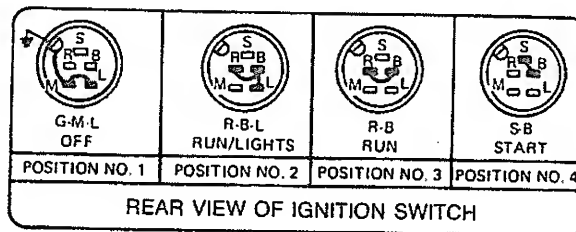
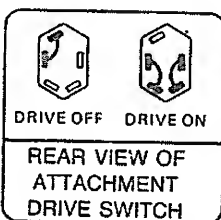
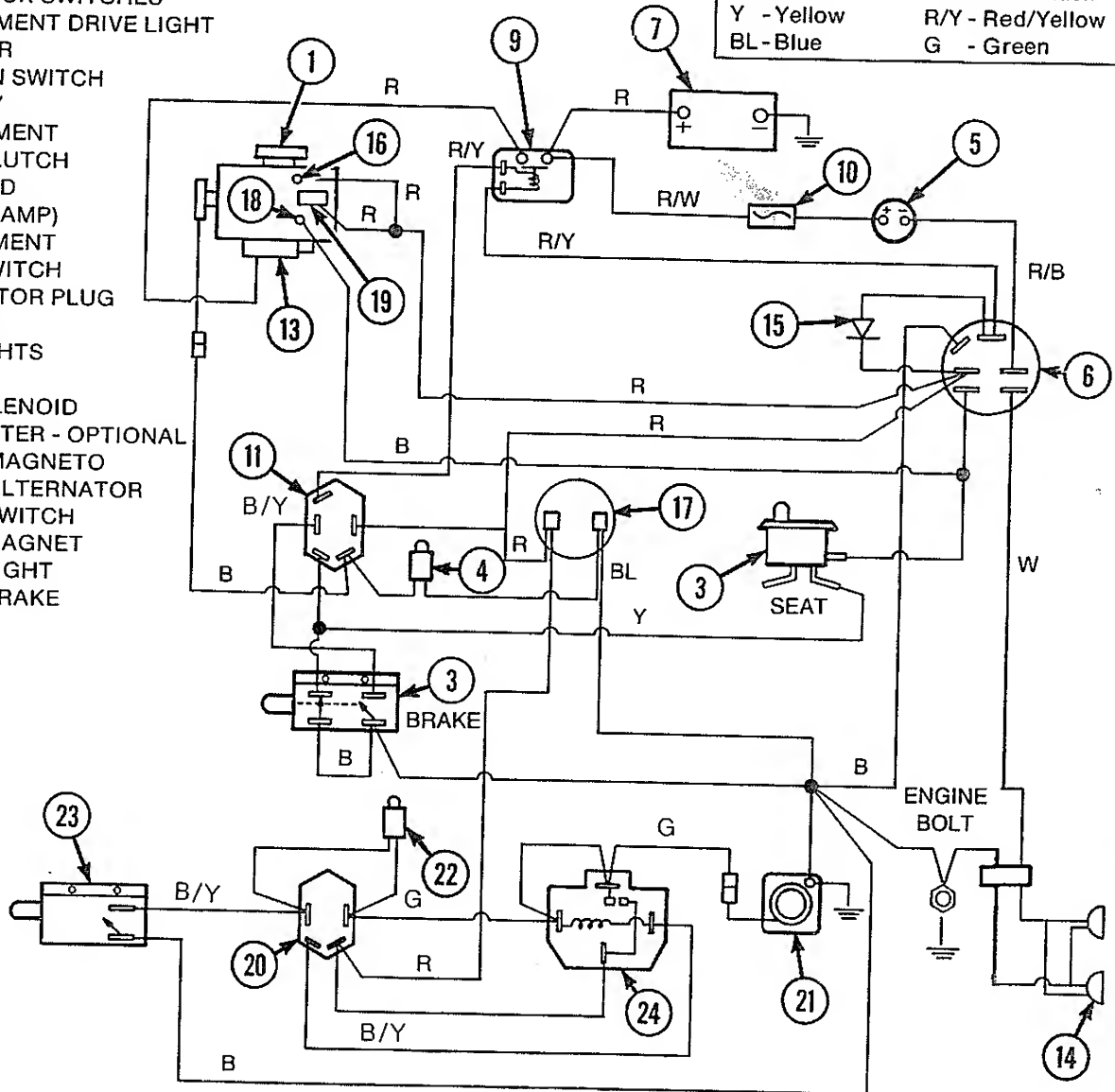
WIRING DIAGRAM

Model 1669 and 1669L

1. ENGINE
3. INTERLOCK SWITCHES
4. ATTACHMENT DRIVE LIGHT
5. AMMETER
6. IGNITION SWITCH
7. BATTERY
8. ATTACHMENT DRIVE CLUTCH
9. SOLENOID
10. FUSE (30 AMP)
11. ATTACHMENT DRIVE SWITCH
12. CONNECTOR PLUG
13. STARTER
14. HEADLIGHTS
15. DIODE
16. FUEL SOLENOID
17. HOUR METER - OPTIONAL
18. ENGINE MAGNETO
19. ENGINE ALTERNATOR
20. CRUISE SWITCH
21. CRUISE MAGNET
22. CRUISE LIGHT
23. CRUISE BRAKE
24. RELAY

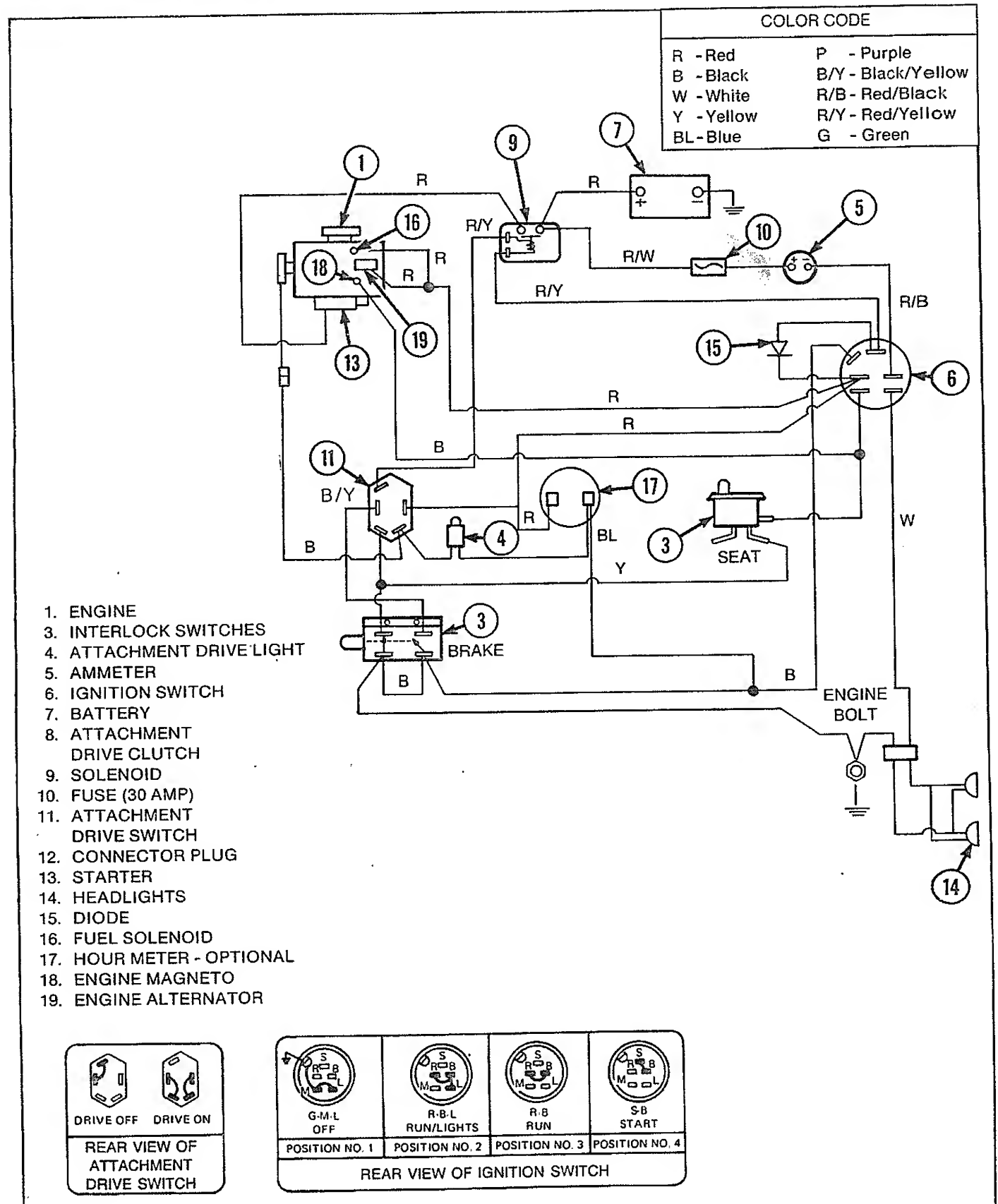
COLOR CODE

R - Red	P - Purple
B - Black	B/Y - Black/Yellow
W - White	R/B - Red/Black
Y - Yellow	R/Y - Red/Yellow
BL - Blue	G - Green



WIRING DIAGRAM

Model 1468





Bolens reserves the right to change specifications, add improvements or discontinue the manufacture of any of its equipment without notice or obligation to purchasers of its equipment.

Bolens' approval of the use of attachments manufactured by allied

manufactures is limited to assurance that such use will not void Bolens warranty on the Bolens equipment to which the allied manufactured attachments are adapted. The responsibility for the design, performance, durability, safety in operation, service repair availability, and warranty obligation remain with the

allied manufacturer. Bolens specifically excludes from its warranty obligation all such allied manufactured attachments.

Bolens warranty will be voided if unapproved attachments are adapted to use with Bolens equipment and are so used.

LIMITED WARRANTY

All new Bolens equipment is warranted by Bolens Corporation, to the original retail purchaser only, to be free from defects in material and workmanship under normal use and service for a period of one year from date of purchase. (This period is limited to 90 days if product is purchased for commercial, institutional, industrial, rental or demonstrator use.) This 90 day limitation does not apply to the Bolens 5000, 5100, 1900 QT, HT, and Diesel Model tractors and their attachments manufactured at Bolens. This warranty does not apply to engines manufactured by Briggs and Stratton, Tecumseh, Kohler and Wisconsin or transmissions manufactured by Peerless. Warranties with respect to these components are provided by their respective manufacturers and copies of such warranties are delivered with each new Bolens product.

Bolens Corporation's obligation under this warranty is limited to the repair or replacement, at its option by an authorized Bolens equipment dealer, of any part found to be defective in material or workmanship without charge for parts and labor.

In order to obtain warranty service, the owner is responsible for:

- 1) Providing proof of purchase documentation, ownership registration or copy of bill of sale.
- 2) Informing any authorized Bolens equipment dealer of the defect and making the product available for repair. (Charges for pick-up, delivery and service calls are not covered by this warranty.)

This warranty does not cover defects, malfunctions or failures caused by:

- 1) Use of unauthorized accessories or attachments.
- 2) Lack of reasonable and necessary maintenance as specified in the "Operation and Safety Instructions".
- 3) Misuse, accidents or normal wear.

DISCLAIMER OF CONSEQUENTIAL DAMAGES: BOLENS CORPORATION SHALL NOT BE LIABLE UNDER ANY CIRCUMSTANCES FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OR EXPENSE OF ANY KIND, INCLUDING BUT NOT LIMITED TO COST OF EQUIPMENT RENTAL, LOSS OF PROFITS OR COST OF HIRING SERVICES TO PERFORM TASKS NORMALLY PERFORMED BY THE EQUIPMENT.

LIMITATION OF IMPLIED WARRANTIES: ANY IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, SHALL BE LIMITED IN DURATION TO A PERIOD OF ONE YEAR (90 DAYS IF PRODUCT IS PURCHASED FOR COMMERCIAL, INSTITUTIONAL, INDUSTRIAL, RENTAL OR DEMONSTRATOR USE) FROM THE DATE OF SALE.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR LIMITATIONS ON HOW LONG IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Bolens Corporation
215 South Park Street
Port Washington, Wisconsin 53074

FORM 3107-9